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THE REARING OF DIRPHIOPSIS EUMEDIDE (SATURNIIDAE)

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THE LARVAE OF THE DIRPHIA GROUP of the Hemileucini appear to have been rarely reared or described and a number of vague and speculative statements have sometimes been made about them.

As the result of being sent ova from the Neotropical area, it has now been possible to elucidate the life-history of a number of species and the first of these is described in this paper.

Ova of *Dirphiopsis eumedide* Cramer were sent to me by air mail post in 1961, 1962 and 1963. These were obtained by Dr. A. D. Blest while he was stationed in the Canal Zone Biological Area of the Smithsonian Institution in Panama. The ova were laid by females taken at a light-trap during August.

THE OVA – On receipt these were off-white in color with a brownish micropyle of medium size. They measured 1.0 x 1:5 x 1.75 mm high. They had been laid in rather irregular batches, firmly affixed to the substratum by a brownish cement. Some of the batches were scattered with hairs from the female abdomen. It seems likely that this was accidental, due to the confined conditions under which they were laid.

Some of the batches received were wholly infertile. Of the others, only about 50 per cent hatched except for 1963 when the hatch was 90 per cent. The unhatched ova were about equally divided between infertility and simple failure of the larvae to eat their way out.

On receipt the eggs were kept at 25°C. Allowing for a 4 day period of transit, the minimum time taken to hatch by four batches was 17, 19, 13, and 18 days. Since these had been laid a few days before dispatch it is a safe assumption that the normal time taken to hatch of *D. eumedide* ova is about three weeks. There is no darkening or other apparent change in the ova immediately prior to hatching.

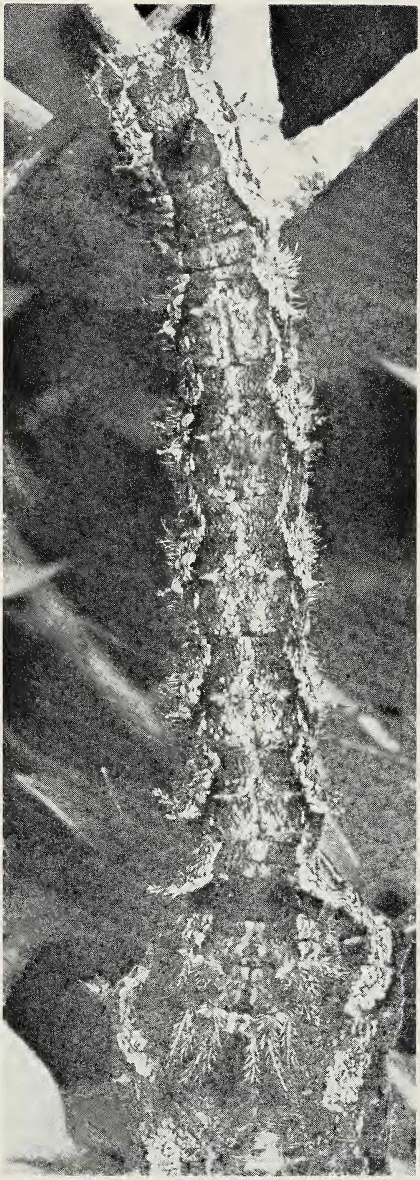

Fig. 1. Fullgrown larva of *Dirphiopsis eumedide* at rest on twig.

THE LARVAE – When newly hatched, the larvae have a pale shiny-brown head with a very fine black ∧ mark above the jaws. The body light brown; chalazae paler brown, almost translucent, bearing long black spines. No descriptions were kept of intermediate instars due to lack of time. From the second to final instar, however, there is little change in general color or patterning. The fully-grown larva is 5-6 cms long. The ground color a brownish-red, mottled with olive-brown and pinkish-brown, darker laterally. There is some variation in shade between individual larvae. The patterning is broken up to give the effect of broad zig-zag lines. The whole surface is covered by a netlike tracery of fine black hairs. Spiracles pink and finely outlined with black. Between segments 1-2 and 2-3 there are paired black areas on the intersegmental membranes and these are only exposed to view when the larvae curl up. These 'lappets' doubtless perform the same function as do those on the better known larvae of certain Lasiocampidae and have evolved independently to serve the same purpose of scaring off would-be predators. The chalazae on segments 1, 2, fairly long, overlap the head, densely clothed with short spines. On segments 3, 4, the dorsal chalazae are shorter but also very densely spined; laterally shorter and bearing rather fewer spines. The chalazae on the remaining segments are very short and bear very short spines, slightly longer along the subspiracular line. On abdominal segment 8 there is, however, a large densely spined central chalaza, and on segment 10 a pair of dorsal chalazae, not so large. The chalazae are colored dark reddish-brown and their spines greyish to black. Ventrally the body, including the legs and prolegs, is moderately clothed with short whitish hairs. The head black with a whitish-brown ∧ and similar coloring to sides. (Fig.1).

FOODPLANTS – The natural foodplant of *D. eumedide* being unknown, the first newly hatched larvae to hand were offered a choice of Hawthorn (*Crataegus oxyacantha*), Apple (*Pyrus* sp.), and Plum (*Prunus domesticus*). After three days they commenced to feed on the first of these. After the first moult the larvae were offered Beech (*Fagus sylvatica*) and they transferred to this in preference. Elm (*Ulmus campestris*) was also later offered and eaten. Subsequent batches of larvae were started off on either Beech or Elm and these commenced to feed within 24 hours of hatching. Other foods readily eaten were Laburnum (*Laburnum anagyroides*) and Black locust (*Robinia pseudo-*

acacia). Since the larvae were being reared in the fall and early winter, the supply of these deciduous trees gave out before pupation and the larvae mostly completed their development on Evergreen oak (*Quercus ilex*). They did not, however, seem altogether happy with this food and virtually the only losses occurred at this stage. According to Dr. A. D. Blest (personal communication) the resultant moths are small compared to feral Panamanian examples.

INSTARS AND GROWTH RATE — The larvae were kept at 20-25°C. At various times this varied for short periods by about 5°C. above and below these limits. Natural British daylight conditions from September to December were experienced by the larvae although they frequently had an extra hour or two of artificial light during the evenings. Under these conditions all the larvae had seven instars. As seems usual with gregarious larvae the moults take place in unison and it is not until the penultimate instar that a noticeable scatter of some 3 days begins to occur. In the final instar, however, the scatter varied from 20-45 days. It should, however, be borne in mind that the slower developers had to spend more time on the not-altogether satisfactory food, Evergreen oak, which doubtless caused some extension of feeding time than would otherwise have taken place had it been possible to continue feeding on Elm. The mean instar times in days, based on several batches and over 200 larvae were as follows: — 1st — 8; 2nd — 9; 3rd — 7; 4th — 8; 5th — 12; 6th — 13; 7th — 32; Total 89. This is a long feeding period for a Saturniid, being exceeded only by *Euleucophaeus rubridorsa* Felder (Gardiner, 1966), and is at least one third longer than other *Dirphia* group species known to me and from which it differs morphologically (Gardiner, *in preparation;* Gardiner 1963).

LARVAL HABITS — The larvae are gregarious. They feed by night and cluster during the day. In the later instars they come down off the foodplant and form a rather loose cluster around the stems of the cut foliage which were placed in a bottle of water. When in this position they bear a remarkable resemblance to the stems and, in spite of the fact that the spines on the chalazae can inflict a reasonably painful sting, are clearly cryptically marked. They are rather slow-moving and lethargic and do not, except in the first instar, show any tendency to walk in single file.

PUPATION – The larvae leave the foodplant to pupate. In their cages they formed a tough fibrous cocoon just below the surface of a layer of peat which was overlain by a quantity of loose dried moss. A few cocoons were formed in the moss itself. The majority of the pupae were used in physiological experiments and only 5 were retained. From these moths emerged after about two months.

DISCUSSION – Under the conditions of rearing *D. eumedide* had a life period of six months which would make it a normally double-brooded species. Due to the scatter in the eclosion period of the few pupae retained, it was unfortunately not possible to obtain pairings.

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